

A new species of *Pentopetia* (Asclepiadaceae) from Madagascar

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KEY WORDS

Pentopetia,
Asclepiadaceae,
Madagascar.

ABSTRACT

A new species, *Pentopetia lutea* from dry southern Madagascar, is described, illustrated and compared to other species of the genus. The pollen, in tetrads, is also described.

MOTS CLÉS

Pentopetia,
Asclepiadaceae,
Madagascar.

RÉSUMÉ

Une nouvelle espèce de région sèche du sud de Madagascar, *Pentopetia lutea*, est décrite, illustrée et comparée aux autres espèces du genre. Le pollen, en tétrades, est aussi décrit et illustré.

While preparing a volume of the subfamily Periplocoideae (Asclepiadaceae) for the "Flore de Madagascar et des Comores" and during the course of a pollen survey of plants encountered during a field trip in southern Madagascar, a new species, *Pentopetia lutea*, was found.

Pentopetia lutea Klack. & Civeyrel, sp. nov.

Species haec corolla vivide lutea a Pentopetiae speciebus ceteris differt, etiam foliis angustatis et subter dense pubescentibus, et coronae lobis curtis et subulatis dignoscenda.

TYPUS.—*Civeyrel* 1243, Madagascar, Toliara prov., 17 km East of Toliara on Road N 7, East of "Montagne de la Table", 110 m, 20 Nov. 1994 (holo-, P; iso-, S, TAN).

Low suffrutescent twiner up to 1 m high, with milky latex, sometimes with short hairs but older branches glabrous. Leaves herbaceous, decussate, mostly on brachyblasts of which usually only one is present at each node; blade linear to narrowly elliptic or narrowly obovate, 20–45 × 1–7 mm, tapering at base into a short but distinct petiole, rounded to usually acute at the apex, glabrous

and bright green above, densely hairy below but with mid-rib almost glabrous; margin entire, revolute; venation faint above, pinnate and indistinctly looped to somewhat reticulate below; mid-rib even to usually impressed above when dry, distinctly raised below; petiole 0.5-1 mm long, with short erect hairs in two lateral lines. Inflorescences very short, terminal on brachyblasts, shorter than adjacent leaves. Flowers pentamerous, actinomorphic, usually solitary or in pairs; pedicels 2-8 mm long, glabrous or with sparse small hairs just below the flower; bracts missing or 1 or 2 at base of pedicel, 1.5-3.5 mm long. Calyx lobes ovate, $4-4.7 \times 2.3-2.8$ mm, acute at apex, longer than the tube, glabrous to sparsely hairy on both sides, with a pair of collectors at each sinus. Corolla contorted with the right lobe margins overlying, not or slightly twisted to the left in bud, with the lobes fused for ca. 1/5 of their length into a tube, bright yellow; tube ca. 2.7 mm long, with 5 patches of long straight hairs below the stamens; lobes $1-1.1 \times 0.5-0.6$ cm, elliptic, acute at apex, with a slightly raised mid-nerve above ending abruptly at the corolla mouth, glabrous on inside but with sparse short hairs at the right half of the lobes outside. Corona lobes 5, free, corolline, inserted at the sinuses of the corolla lobes, 1.7-1.8 mm high, filiform, slightly bent inwards, much shorter than the staminal column, glabrous. Stamens in a column inserted at the mouth of the corolla tube just below the corona lobes; staminal column 4-4.4 mm high, pale brown; filaments 2-2.2 mm long, filiform, arched, glabrous; thecae 3-3.3 mm long, sagittate, dorsally hairy, with slightly protruding flat connective. Pollen carriers 2.3-2.7 mm long; spathe elliptic, ca. 1.3 mm long, impressed along mid-line on dorsal side, rather abruptly tapering at base into a distinct stalk; viscidium shoe-shaped. Ovary semi-inferior, with numerous ovules. Styles 2, distinct, united only just below the style head, 2-2.7 mm long. Style head conical. Follicles not seen.—Fig. 1, 2A.

DISTRIBUTION AND HABITAT.—*Pentopetia lutea* is distributed in the dry south-western part of Madagascar in rather sparse shrub and spiny vegetation, and is probably restricted to the Southern Domain phytogeographical area (after

HUMBERT 1955). The type specimen was found near the Montagne de la Table on limestone soil and sympatric with all genera found in Madagascar of the subfamily Secamonoideae (except *Calyptranthera* Klack.) but no other representative of the subfamily Periplocoideae was found in the immediate area. At the same locality *Secamone bosseri* Klack., *S. geayi* Costantin & Gallaud, *Secamonopsis microphylla* Civeyrel & Klack., and *Pervillea phillipsonii* Klack. were present.

Flowering specimens of *Pentopetia lutea* have been seen from November and December.

PARATYPES.—MADAGASCAR: *Phillipson* 2989, Toliara, Cap Ste. Marie Reserve, SW of Tsiombe, 200 m, 1988 (P); 3039, Toliara, SE of Tulear on Route Nationale 7, 15 km from town near La Table, 75 m, 1988 (P).

POLLEN.—The pollen grains are released in tetrads, either plane rhomboidal (Fig. 2B) or decussated tetrahedric tetrads (dimensions $97.3 (\pm 7) \times 71.6 (\pm 6.9) \mu\text{m}$). The tetrads are calymated (GUINET 1965; VAN CAMPO & GUINET 1961) which means that there is a common wall separating the grains. This common wall is perforated with cross wall connections between the grains. Exine is smooth with a perforate rectum; those perforations are more abundant near the junctions of the grains (Fig. 2C). Under the rectum a granulate infratectum is observable in light microscopy. The thickness of the exine is ca. 1.5-2 μm . There are between 5-7 porate apertures usually in contact at grain boundaries (Fig. 2C). Rarely a solitary pore can be found on the distal face of one grain (Fig. 2B).

DISCUSSION.—*Pentopetia* Decne. is a genus endemic to Madagascar which is characterized by its distinct and sometimes very long and filiform corona lobes situated in the sinuses of the corolla lobes. *Pentopetia lutea* is furnished with rather short, although distinct, subulate corona lobes. Similar corona lobes are found in e.g. *P. cotoneaster* Decne. and *P. pinnata* Costantin & Gallaud. *Pentopetia lutea*, however, differs from these species as well as from all other species of *Pentopetia* by its thick, bright yellow petals, contrary to the white to red, greenish, or cream to pale yellow

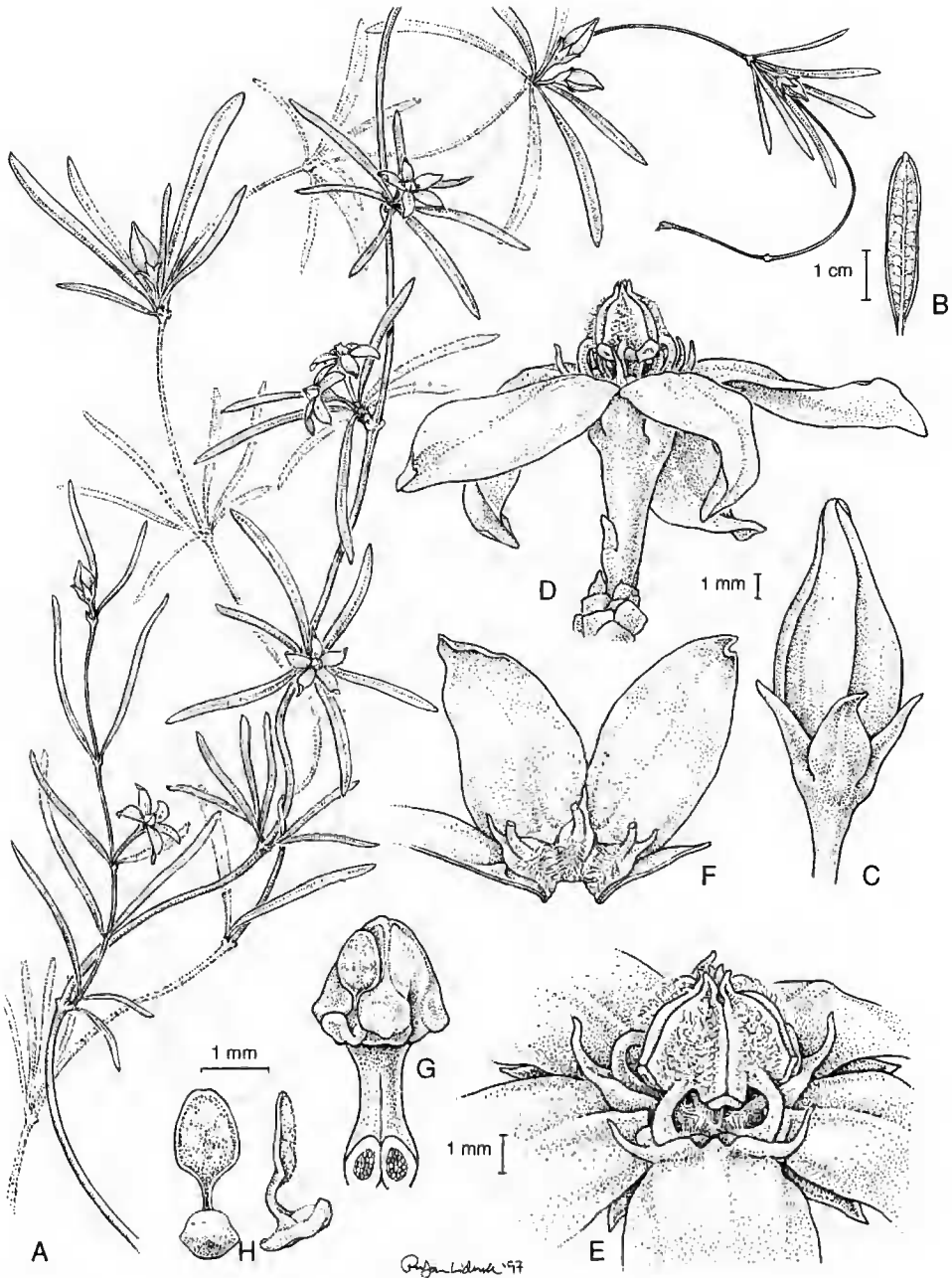


Fig. 1.—*Pentopetia lutea*: A, habit; B, leaf, adaxial side; C, flower in bud; D, one-flowered inflorescence; E, gynostegium and portion of corolla; F, portion of corolla from within (anthers removed); G, gynoeceum showing style head with one translator, two mostly free styles and sectioned ovaries; H, translator. (A, Phillipson 3039; B, Phillipson 2989; C-H, Civeyrel 1243, spirit material).

coloured flowers otherwise found in the genus. *Pentopetia lutea* furthermore differs from all species of *Pentopetia*, except *P. dasynema* Choux, by its narrow leaves. It is easily separated from the latter species, however, by its thick indumentum of the leaves below and by its flowers being twice as large. A narrow-leaved and in habit somewhat similar taxon described as *P. linearifolia* Choux, is a species of *Secamone*, *S. geayi* Costantin & Gallaud.

Pentopetia lutea also shows affinity to *Cryptolepis albicans* Jumelle & Perrier, a cream-flowered Malagasy Periplocoideae placed in *Cryptolepis* due to its much reduced corona lobes. In addition to its short, although well developed, corona lobes, *P. lutea* differs from *C. albicans* also by its narrow leaves, by its bright yellow flowers as well as few-flowered inflorescences. They share, however, a thick leaf indumentum below.

Caution is highly appropriate when describing

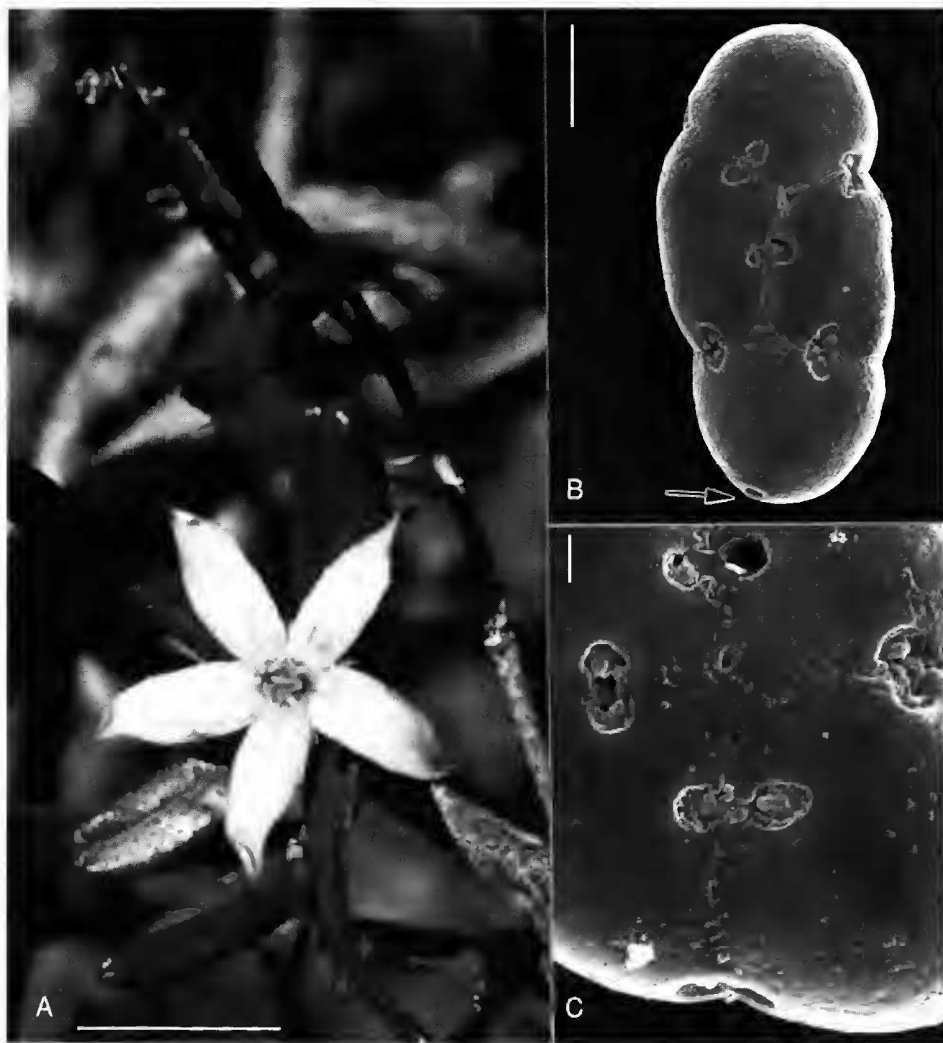


Fig. 2.—*Pentopetia lutea*. Plant in the wild (Civeyrel 1243) and pollen morphology (SEM): A, habit; B, acetolysed rhomboidal tetrad, arrow indicating a pore on a distal face of the tetrad; C, detail of a square acetolysed tetrad showing the perforated tectum on the exine and the porate apertures. (Scale bars: A = 1 cm; B, C = 10 μ m).

new *Pentopetia*. The variation between species and/or within species of *Pentopetia* is complicated, and either a number of species and varieties or just a few polymorphic species, could be proposed to explain the pattern. This has been discussed in length and detail by COSTANTIN & GALLAUD (1907a: 439, 1907b: 335), JUMELLE & PERRIER (1908a: 4, 1908b: 165) and CHOUX (1914: 221). *Pentopetia lutea*, however, is distinctly outside the morphological variation pattern of all known taxa of *Pentopetia*, and we do not hesitate to describe this new species.

The pollen morphology is in accordance with pollen of other species of *Pentopetia* (VERHOEVEN & VENTER 1994).

Acknowledgements

This research was supported by a grant from the European community in the program Human Capital and Mobility n° ERBCHB1CT-930564 for L. CIVEYREL. The authors thank the Royal Botanical Gardens, Kew, the Director of the P.B.Z.T. and the Direction du Service des Eaux et Forêt in Madagascar for the help they provided L. CIVEYREL during her field trip and the Director from the Muséum National d'Histoire Naturelle in Paris for providing access to the Malagasy collection. The illustration was prepared by Pollyanna LIDMARK at the Swedish Museum of Natural History. This work is the n° 97-091 for ISEM Publications.

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*Manuscript received 28 July 1997;
revised version accepted 15 September 1997.*